IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

RICHARD ALLEN GILL

Serial No.: 10/712,074

Filed: November 13, 2003

For: PERFORMANCE ENHANCEMENT FOR TAPE WRITE IMMEDIATE OPERATIONS

Group Art Unit: 2627

Examiner: Dismery E. Mercedes

Attorney Docket No.: 2002-106-TAP

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is a Brief in support of an Appeal from the final rejection of claims 1-12 in the April 9, 2008 Office Action for the above-identified patent application.

I. REAL PARTY IN INTEREST

The real party in interest is Storage Technology Corporation (Assignee).

II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences known to the Appellant, the Appellant's legal representative, or the Assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-12 are pending. Claims 1-12 are rejected and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

None.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 provides a method for writing data in a tape drive. The method includes allocating a blank area for transpose writing on a magnetic tape, Application, p. 9, ll. 23-30, writing a first plurality of data sets on the magnetic tape adjacent to the allocated blank area, wherein the tape drive maintains full operating speed during intervals between writing successive data sets, resulting in spaces between the data sets, Application, p. 8, ll. 15-28, and identifying a data timeout wherein a data timeout occurs if buffered data are not detected within a specified period of time, Application, p. 10, ll. 19-22. The method also includes performing, in response to the data timeout, a single repositioning of the tape and writing a transposed data block to the allocated blank area, wherein the transposed data block contains the same content as the first plurality of data sets, Application, p. 10, l. 29 - p. 11, l. 9.

Claim 5 provides a tape drive. Application, Figure 1, 100. The tape drive includes a means for allocating a blank area for transpose writing on a magnetic tape, Application, p. 9, ll. 23-30, a write head, Application, Figure 1, 102, for writing a first plurality of data sets on the magnetic tape adjacent to the allocated blank area, wherein the tape drive maintains full operating speed during intervals between writing successive data sets, resulting in spaces between the data sets, Application, p. 8, ll. 15-28, and a means for identifying a data timeout wherein a data timeout occurs if buffered data are not detected within a specified period of time, Application, p. 10, ll. 19-22. The tape drive also includes a means

for performing, in response to the data timeout, a single repositioning of the tape and writing a transposed data block to the allocated blank area, wherein the transposed data block contains the same content as the first plurality of data sets, Application, p. 10, l. 29 - p. 11, l. 9.

Claim 9 provides a computer readable medium encoded with a data structure for writing data in a tape drive. Application, p. 11, ll. 18-27. The computer readable medium includes first instructions for allocating a blank area for transpose writing on a magnetic tape, Application, p. 9, ll. 23-30, second instructions for writing a first plurality of data sets on the magnetic tape adjacent to the allocated blank area, wherein the tape drive maintains full operating speed during intervals between writing successive data sets, resulting in spaces between the data sets, Application, p. 8, ll. 15-28, and third instructions for identifying a data timeout wherein a data timeout occurs if buffered data are not detected within a specified period of time, Application, p. 10, ll. 19-22. The computer readable medium also includes fourth instructions for performing, in response to the data timeout, a single repositioning of the tape and writing a transposed data block to the allocated blank area, wherein the transposed data block contains the same content as the first plurality of data sets, Application, p. 10, l. 29 - p. 11, l. 9.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 3, 5, 7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,856,479 (Jaquette) and U.S. Pat. No. 5,210,829 (Bitner). Claims 2, 4, 6, 8, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaquette, Bitner and U.S. Pat. No. 5,995,306 (Contreras).

VII. ARGUMENT

A. Claims 1, 3, 5, 7, 9 and 11 are patentable under 35 U.S.C. 103(a) over Jaquette and Bitner

With regard to claim 1, Jaquette does not teach allocating a blank area for transpose writing on a magnetic tape. Nevertheless, the Examiner cites the "gaps" of Jaquette to find the above limitation:

> Referring to FIG. 2, data is typically recorded on magnetic tape sequentially with only short gaps between data sets, for example between data sets 31 and 32, 32 and 33, etc. These gaps may be written with an Interblock Gap (IBG) pattern, or may comprise a Data Set Separator (DSS) pattern 40, as is known to those of skill in the art. The gap may comprise an actual unrecorded portion and a portion that is recorded. For example, the LTO format DSS comprises a tone pattern between data sets. As discussed above, the tape is written or read while motors 25 of FIG. 1 move the tape longitudinally. Data typically comprises a string of records arranged in data sets, each with a DSS, which are written with nominal spacing.
>
> Jaquette, col. 5, ll. 35-47 (emphasis added).

The "gaps" of Jaquette, however, are not allocated for transpose writing. Rather, the "accumulated transactions" of Jaquette are recursively written after the "gaps." With reference to Figure 3, the data set 100 (and access point 115) follow a DSS rather than being written over it:

> In accordance with the present invention, the controller 18 writes each detected synchronized transaction, illustrated as a record 50-53, of the detected pattern from the buffer to the magnetic tape 14, e.g., as data sets 80-83, above. Previous synchronized transactions of the detected pattern may be excluded, having already been written in the manner discussed above before the pattern is detected. Thus, in FIG. 3, the previous synchronized transactions may comprise the previous data 99. Upon writing each synchronized transaction of the detected pattern from the buffer to the magnetic tape, the controller accumulates the synchronized transaction in the buffer 30; and subsequently recursively writes the accumulated transactions from the buffer to the magnetic tape in a sequence,

> e.g., illustrated as data sets 100, 101. The recursive writing may comprise a backhitch to place the recursively written accumulated transactions following the preceding data 99, and with the nominal gap.
>
> Thus, the synchronized transactions 50-53 have been immediately written to the magnetic tape 14, and preserved against a power loss at the buffer 30, as work copies in data sets 80-83, while also being accumulated in buffer 30, and then recursively written to immediately follow the preceding data 99 in data sets 100,101, saving space. Once the transactions have been recursively written, the work copies 80-83 may be overwritten.
>
> Jaquette, col. 7, ll. 14-39 (emphasis added).

With regard to claim 1, Jaquette does not teach writing a first plurality of data sets on the magnetic tape adjacent to the allocated blank area. As discussed above, Jaquette lacks the claimed allocated blank area.

With regard to claim 1, the Examiner asserts that "it would have been obvious . . . to implement a data timeout routine as disclosed by Bitner in the method of Jaquette et al. the motivation being to provide fewer stall of the host computer and reduce the number unnecessary repositioning of the tape, thus reducing the mechanical wearing of the tape and tape heads . . . ." Office Action, April 9, 2008, p. 3. The Examiner's assertions, however, lack technical merit. The teachings of Bitner, as applied to Jaquette, cannot "provide fewer stall of the host computer and reduce the number unnecessary repositioning of the tape" because Jaquette employs only a single backhitch:

> Synchronized data is written to magnetic tape while reducing the number of backhitches. A controller detects a pattern of synchronizing events for received data records to be written to tape; writes each transaction of data records to the magnetic tape; accumulates the synchronized transactions in a buffer; and subsequently recursively writes the accumulated transactions of

> data records from the buffer to the magnetic tape in a sequence. A single backhitch may be employed to place the recursively written accumulated data records following the preceding data, maximizing performance and capacity.
>
> Jaquette, Abstract (emphasis added).

One of ordinary skill would not have had reason to combine the teachings of Bitner with Jaquette. The Examiner has not established a *prima facie* case of obviousness.

Claims 5 and 9 are patentable for the reasons claim 1 is patentable.

Claims 3, 7 and 11 are patentable because they depend from one of the independent claims.

B. Claims 2, 4, 6, 8, 10 and 12 are patentable under 35 U.S.C. 103(a) over Jaquette, Bitner and Contreras

Claims 2, 4, 6, 8, 10 and 12 are patentable because they depend from one of the independent claims.

Please charge the $510 fee to Deposit Account No. 02-3978. Please charge any additional fee or credit any overpayment in connection with this filing to Deposit Account No. 02-3978.

Respectfully submitted,

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Attached - Appendices

VIII. CLAIMS APPENDIX

1. A method for writing data in a tape drive, the method comprising:

allocating a blank area for transpose writing on a magnetic tape;

writing a first plurality of data sets on the magnetic tape adjacent to the allocated blank area, wherein the tape drive maintains full operating speed during intervals between writing successive data sets, resulting in spaces between the data sets;

identifying a data timeout wherein a data timeout occurs if buffered data are not detected within a specified period of time; and

performing, in response to the data timeout, a single repositioning of the tape and writing a transposed data block to the allocated blank area, wherein the transposed data block contains the same content as the first plurality of data sets.

2. The method according to claim 1, further comprising allocating a second blank area for transpose writing adjacent to the transposed data block, wherein allocating the second blank area may include erasing a portion of the first plurality of data sets.

3. The method according to claim 1, wherein the data written to both the first plurality of data sets and the transposed data block is stored in a data buffer.

4. The method according to claim 3, wherein the size of the blank area allocated for transpose writing is determined by the size of the data buffer and a specified data transfer rate.

5. A tape drive, comprising:

a means for allocating a blank area for transpose writing on a magnetic tape;

a write head for writing a first plurality of data sets on the magnetic tape adjacent to the allocated blank area, wherein the tape drive maintains full operating speed during intervals between writing successive data sets, resulting in spaces between the data sets;

a means for identifying a data timeout wherein a data timeout occurs if buffered data are not detected within a specified period of time; and

a means for performing, in response to the data timeout, a single repositioning of the tape and writing a transposed data block to the allocated blank area, wherein the transposed data block contains the same content as the first plurality of data sets.

6. The tape drive according to claim 5, further comprising a means for allocating a second blank area for transpose writing adjacent to the transposed data block, wherein allocating the second blank area may include erasing a portion of the first plurality of data sets.

7. The tape drive according to claim 5, wherein the data written to both the first plurality of data sets and the transposed data block is stored in a data buffer.

8. The tape drive according to claim 7, wherein the size of the blank area allocated for transpose writing is determined to the size of the data buffer and a specified data transfer rate.

9. A computer readable medium encoded with a data structure for writing data in a tape drive, the computer readable medium comprising:

first instructions for allocating a blank area for transpose writing on a magnetic tape;

second instructions for writing a first plurality of data sets on the magnetic tape adjacent to the allocated blank area, wherein the tape drive maintains full operating speed during intervals between writing successive data sets, resulting in spaces between the data sets;

third instructions for identifying a data timeout wherein a data timeout occurs if buffered data are not detected within a specified period of time; and

fourth instructions for performing, in response to the data timeout, a single repositioning of the tape and writing a transposed data block to the allocated blank area, wherein the transposed data block contains the same content as the first plurality of data sets.

10. The computer readable medium according to claim 9, further comprising fifth instructions for allocating a second blank area for transpose writing adjacent to the transposed data block, wherein allocating the second blank area may include erasing a portion of the first plurality of data sets.

11. The computer readable medium according to claim 9, wherein the data written to both the first plurality of data sets and the transposed data block is stored in a data buffer.

12. The computer readable medium according to claim 11, wherein the size of the blank area allocated for transpose writing is determined by the size of the data buffer and a specified data transfer rate.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.